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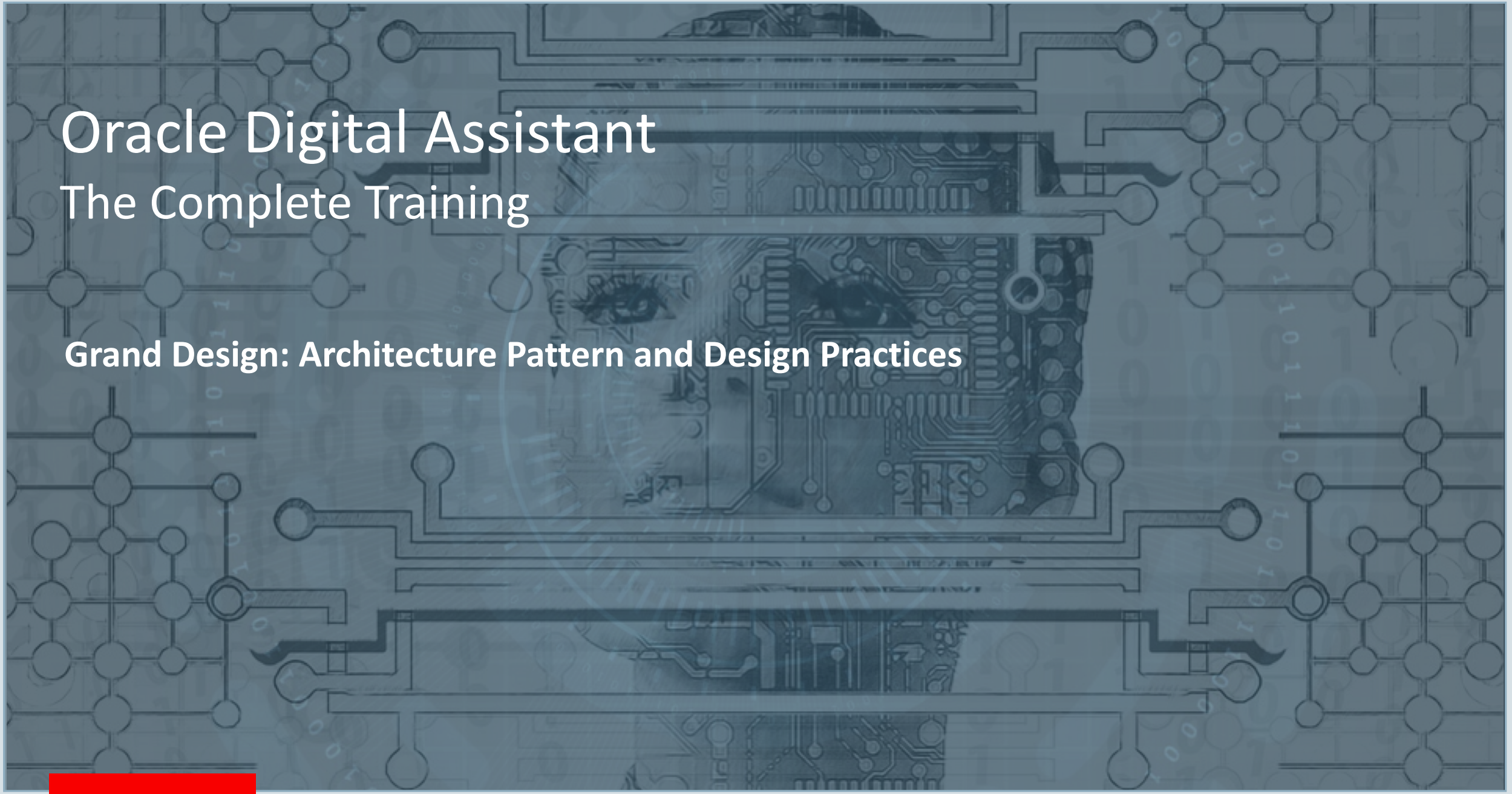
# Oracle Digital Assistant

## The Complete Training

**Grand Design: Architecture Pattern and Design Practices**



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# Safe Harbor Statement

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# Topic agenda

1. Architecture matters
2. Skill patterns
3. Digital assistant pattern
4. Skill Parameters

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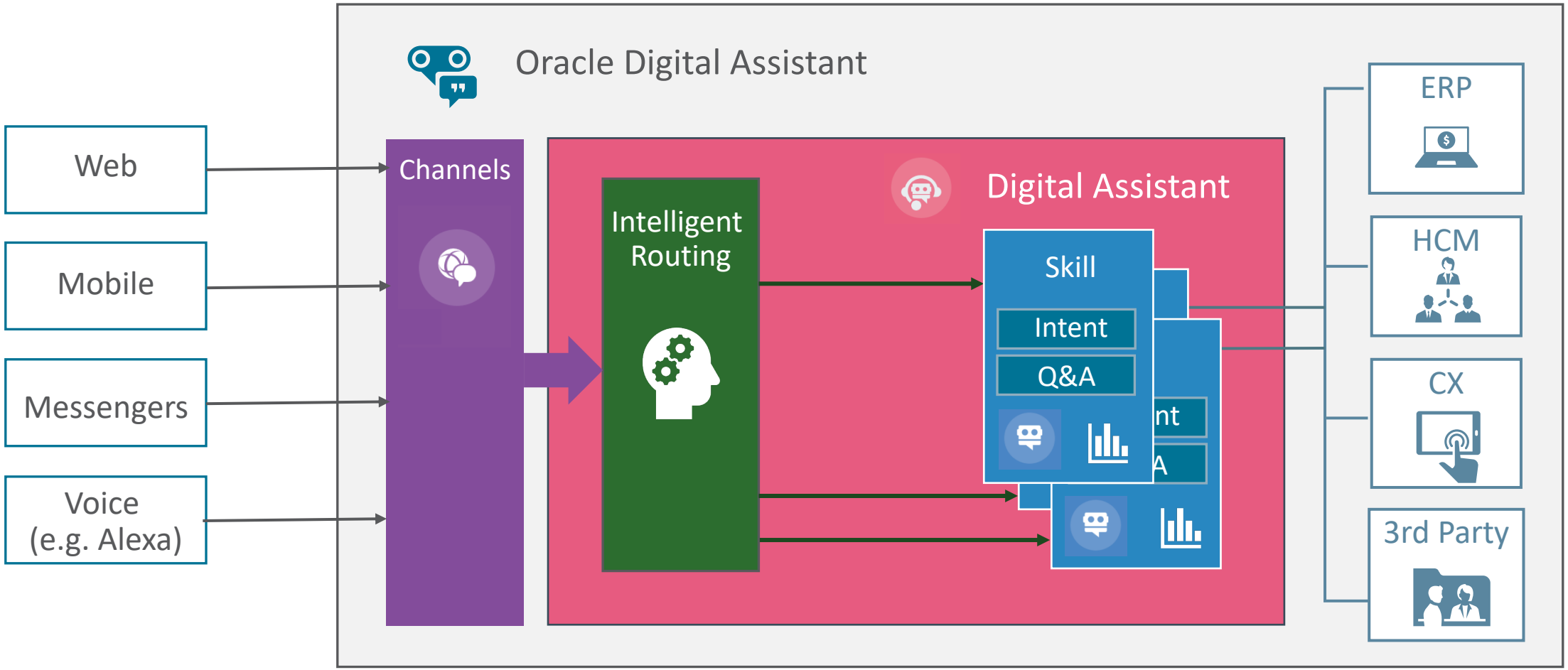
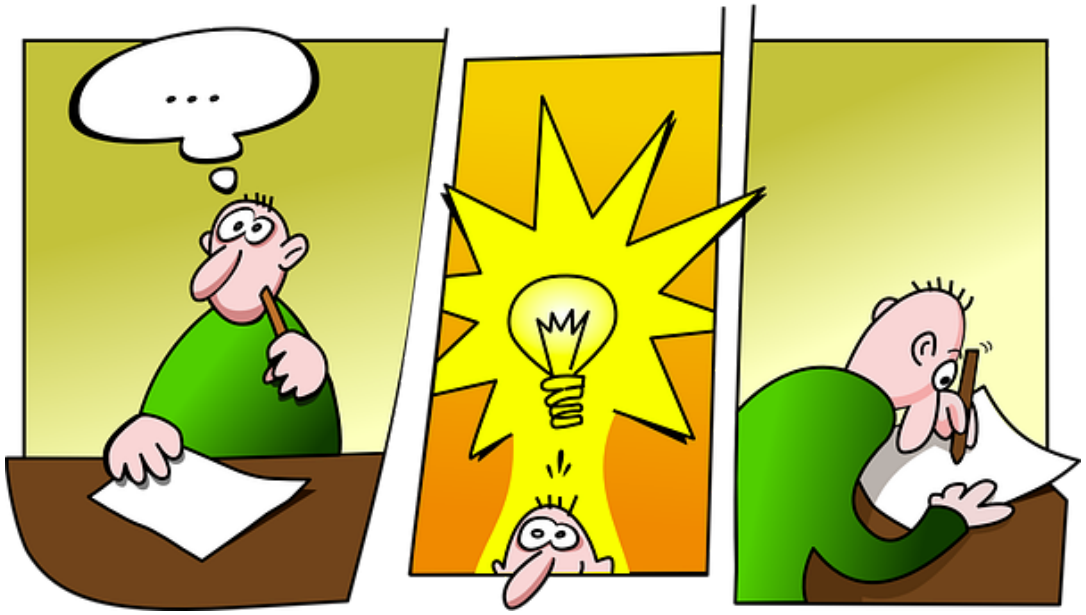
# Oracle Digital Assistant architecture



# Artificial intelligence alone doesn't build the bot

- Requires conversation design skills
- Uses a mix of conversational AI and dialog flow to assist users
- Artificial intelligence does not replace good design practices
- Building chatbots is a software development project



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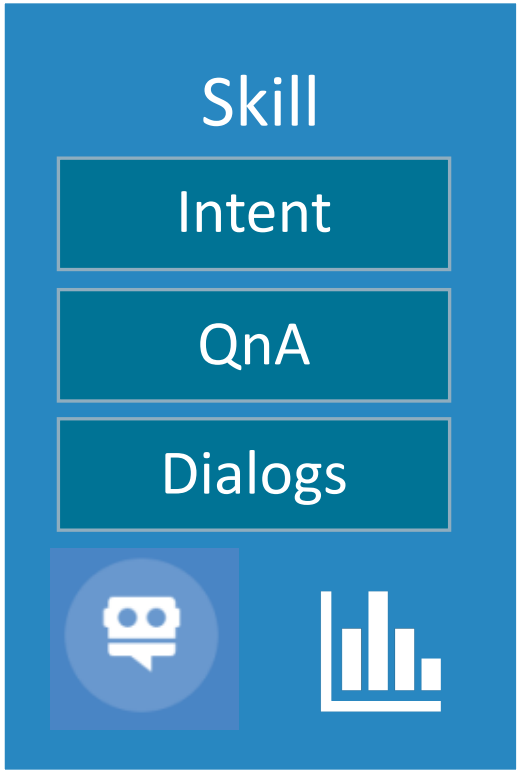
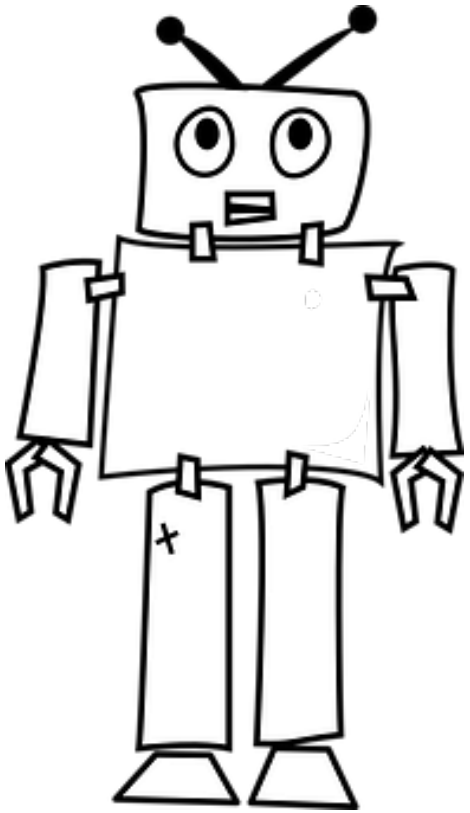
# About skills

- Skills are units of work
  - Assist users in completing a conversational task
  - Access remote services and backends
  - Do not make assumptions about the existence of user scope variables
- Scope of a skill can be
  - single use case
  - multiple use cases
  - complete business solution
- Supports modularization



An **analogy to Web development** helps to identify Oracle Digital Assistant development patterns



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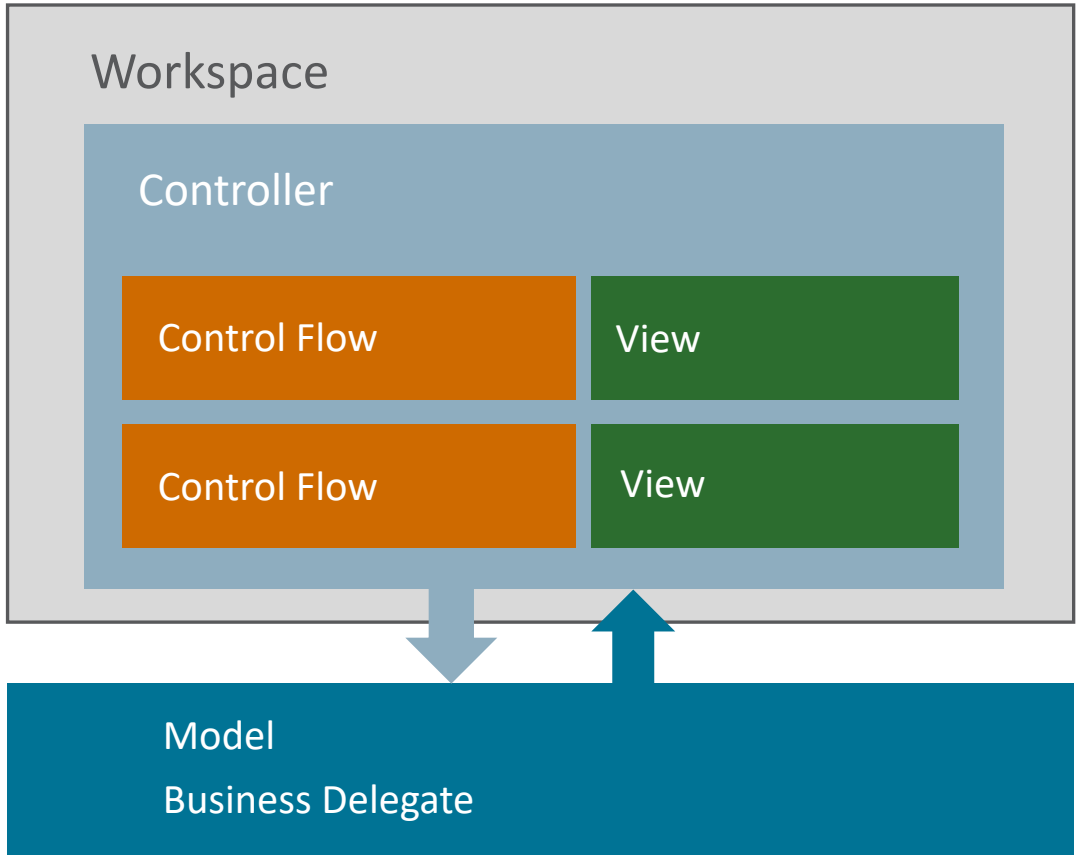
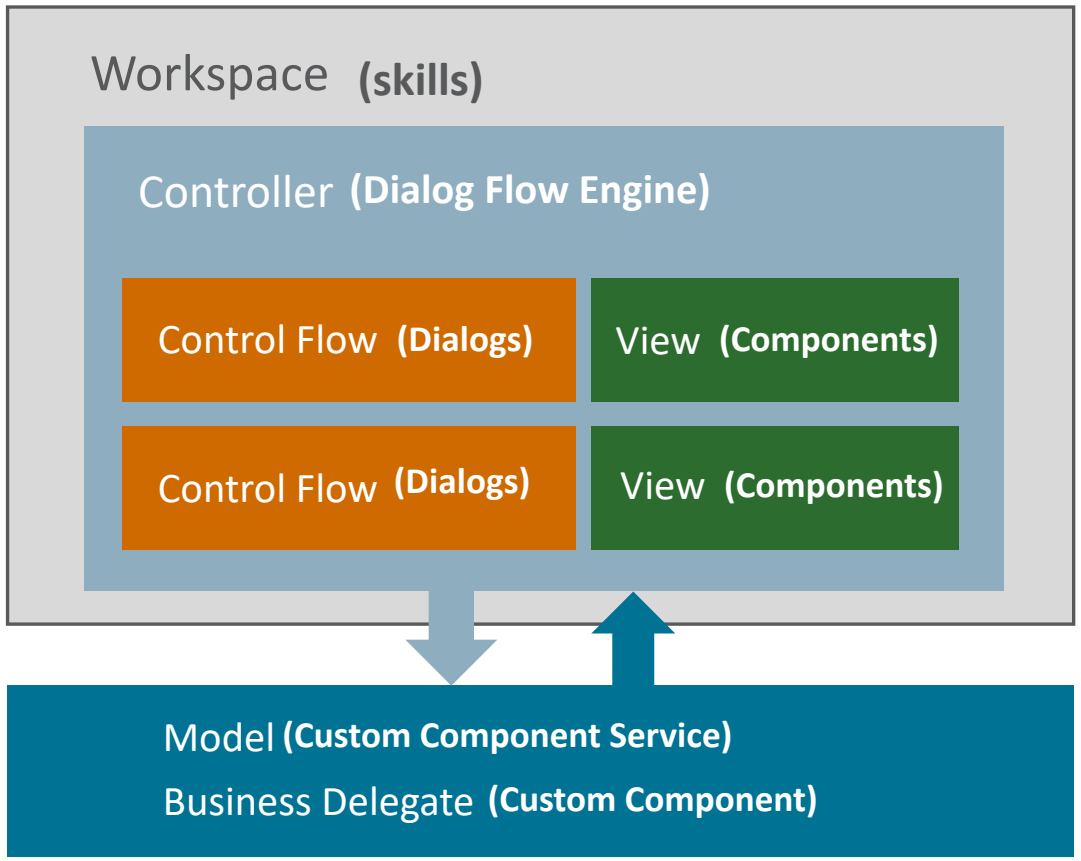
# Thinking in patterns: Web analogy

- Workspace
  - Holds project code, libraries
- Controller
  - Navigates UI and holds state
- View
  - Renders application response
- Model
  - Data and business service access
- Business delegate



# Thinking in patterns: Oracle Digital Assistant

- Skill (Workspace)
  - Holds conversations, intents, utterances and custom logic
- Dialog Flow Engine (Controller)
  - Navigates between dialogs, holds state
- Components (View)
  - Renders bot responses
- Custom Component Service (Model)
  - Data and business service access
- Custom component (Business delegate)



# Architectures

## All-in-one

- Skill as complete business solution
  - Finance, Pizza, Retail
- Skills as stand-alone solutions
- Reusability not a primary concern
- Skills are most likely built by different teams
  - Risk of inconsistent behavior and look

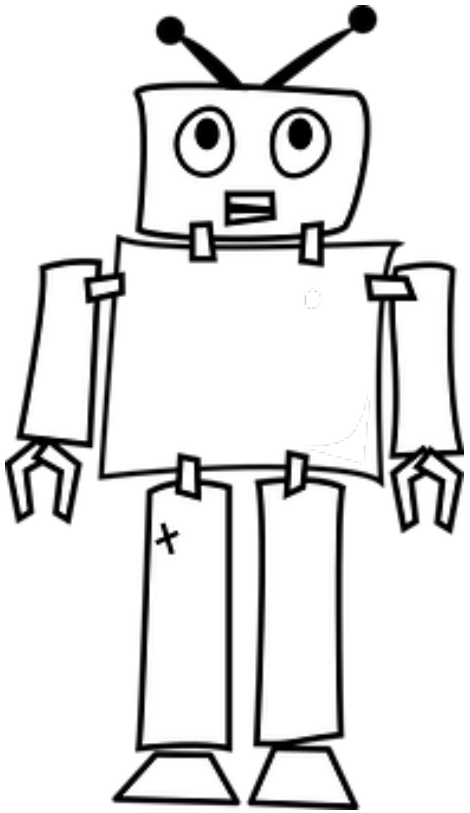
## Part-of-a-whole

- Skill as part of a whole
  - Member registration, course booking, message board, meeting organizer
- Small skills built with reuse in mind
- Very likely built by same team
  - Easier to enforce design principles and guidelines for a consistent appearance

# Design Patterns

## Custom Components

You build custom components for **backend integration** and to implement custom logic.



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# Custom component deployment considerations

## Exclusive Component Service

### Local Component Container

- Skills can run different versions of a component
- Breaking a component in an update does not impact all skills but only those updated to the new version
- Error correction requires updating all deployments

- No credential store
- Component code exported with skill

## Shared Component Services

### Remote Node Servers

- Component source code resides on server
- Option to share code with other applications
- Remote server may act as a data and service integration layer
- Single point of development and maintenance

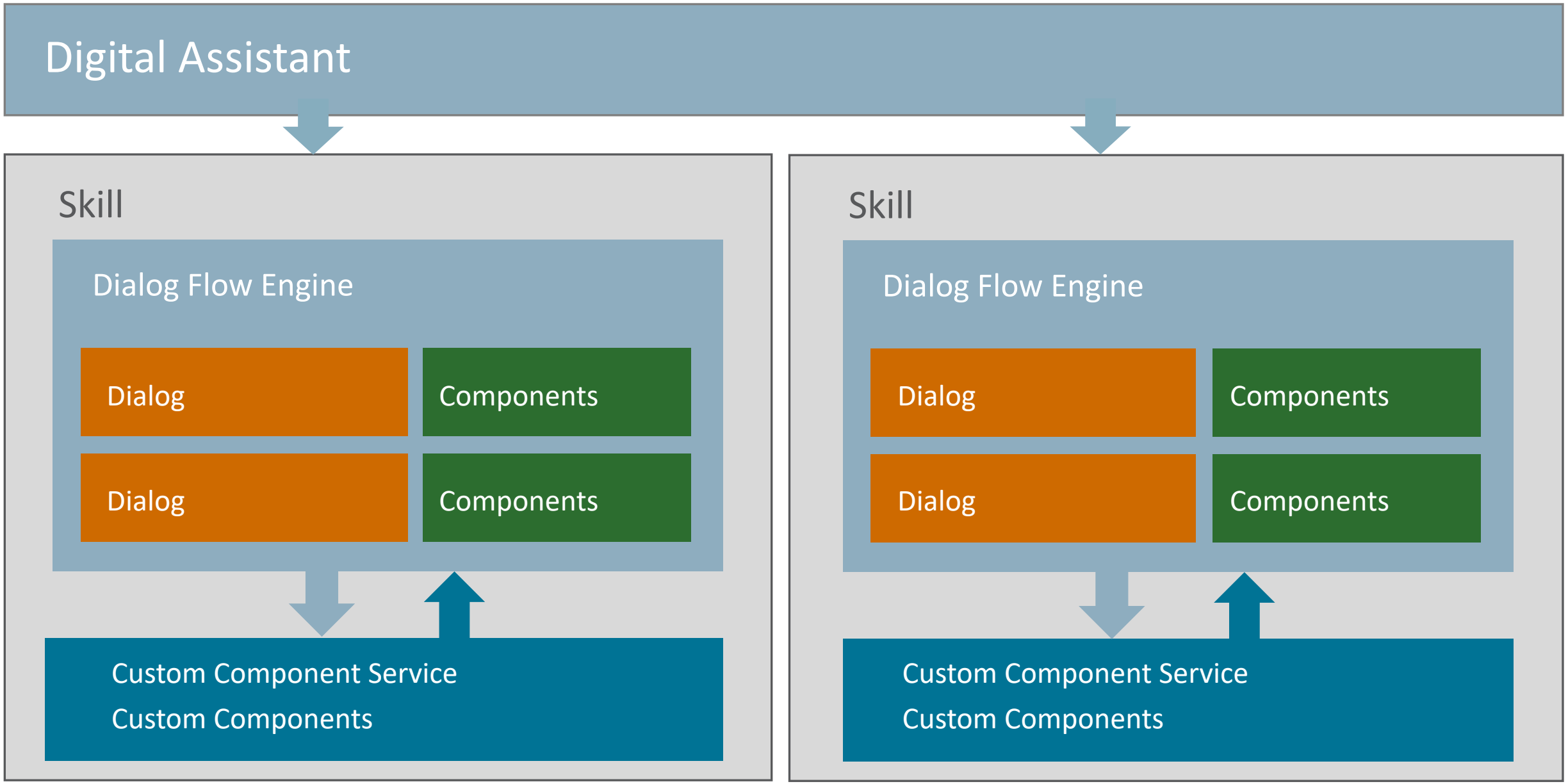
- Failure may impacts multiple skills

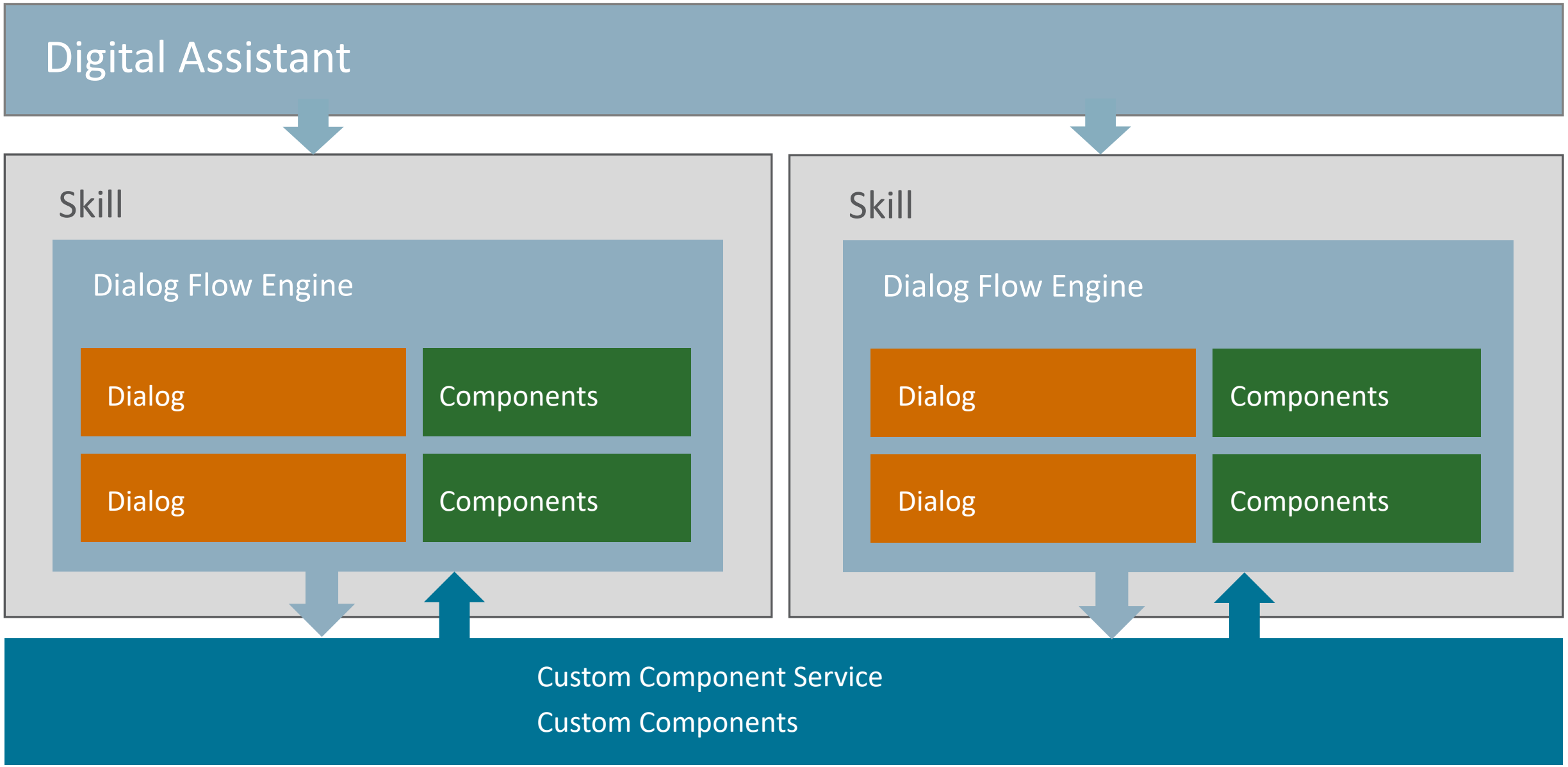
### Mobile Hub

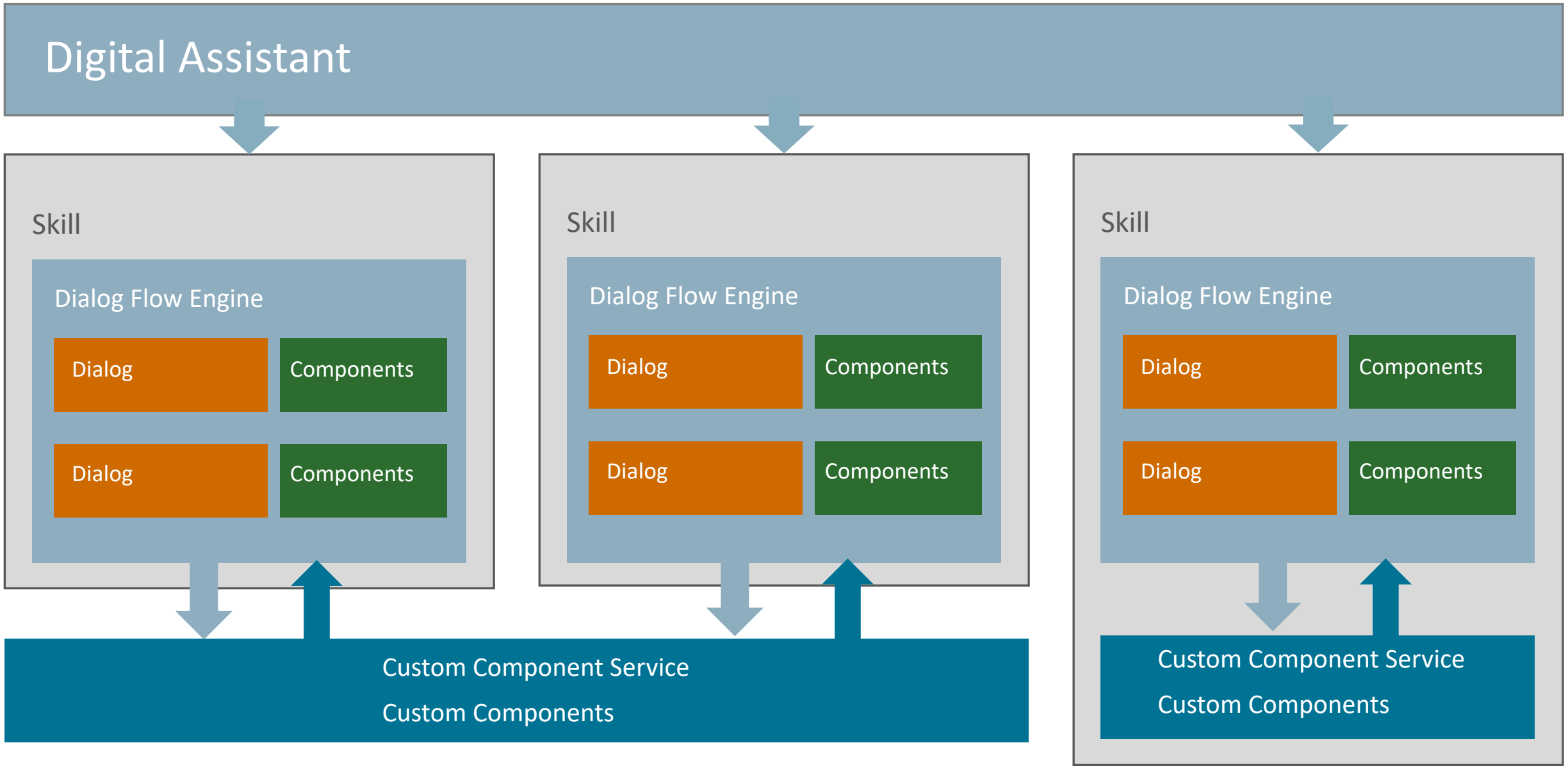
- Multi channel backend service
- Provides platform services and declarative service connectors
- Secure container
- Storage options

### 3rd Party Node Servers

- Allow use of environment variables (configuration)



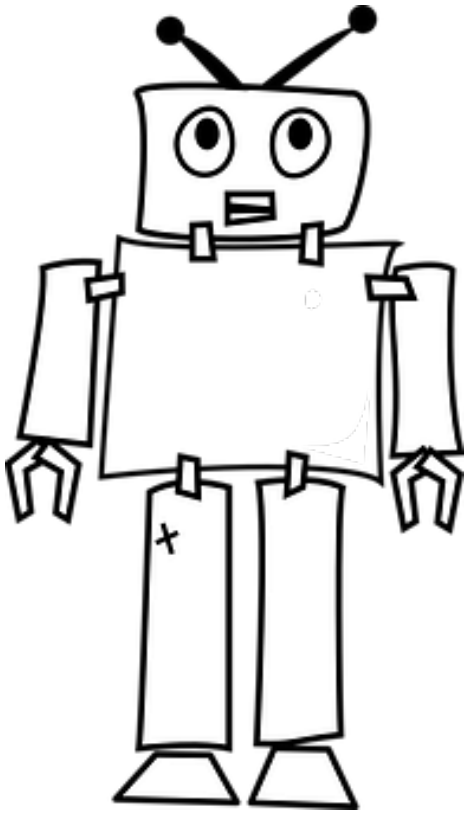




# Design Patterns

## Referencing Skills From Skills

The System.Intent component accesses the skill's **NLP model** to resolve the user intent and to extract entities from the user message



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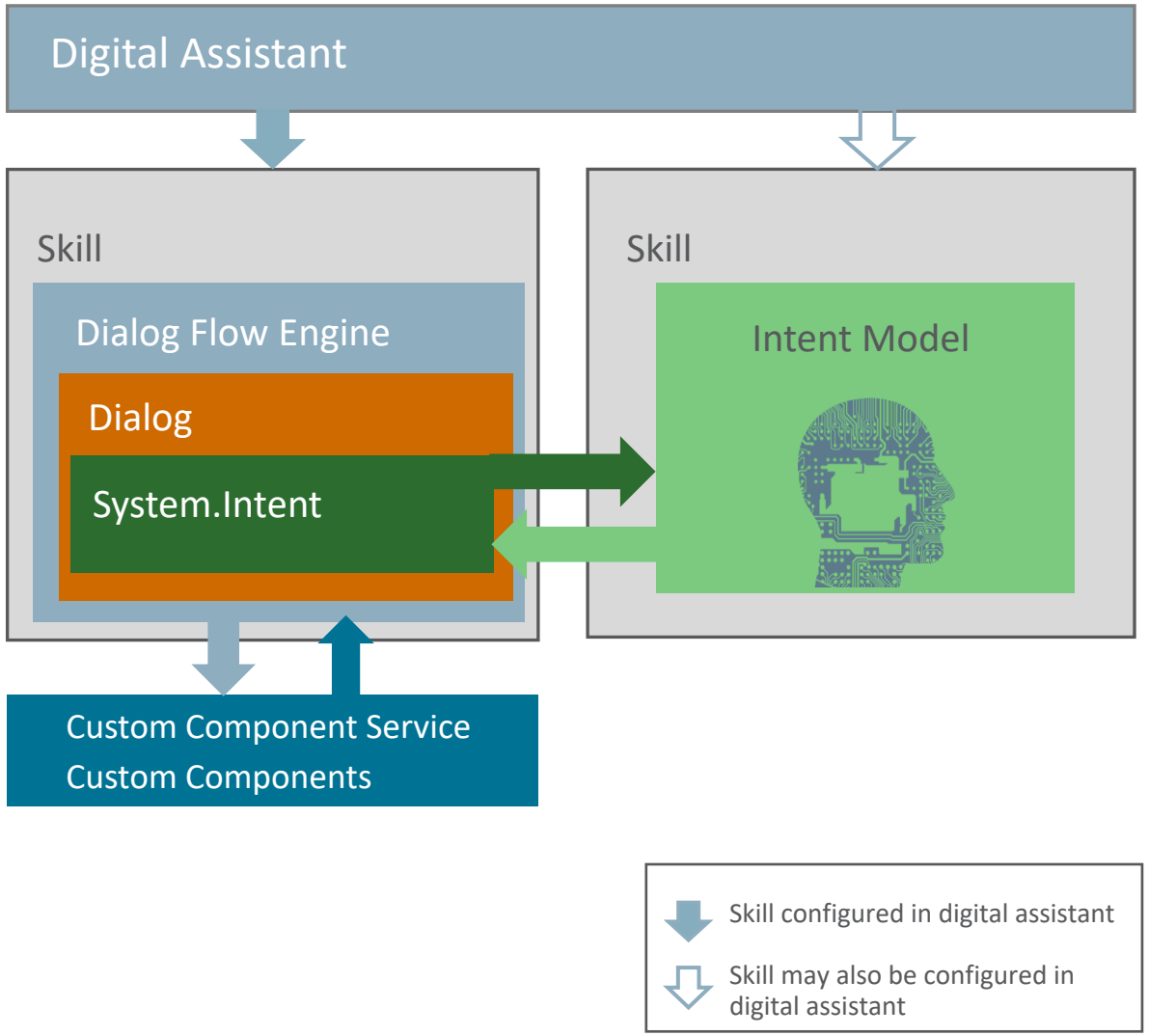
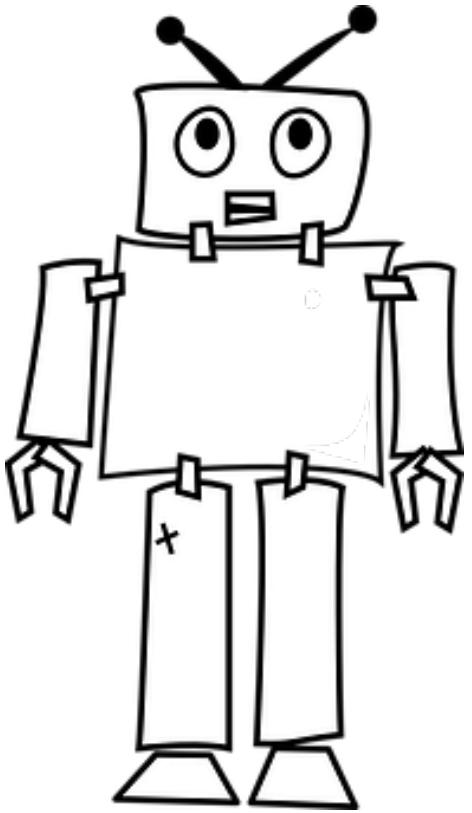
# Interskill referencing

- A skill's `System.Intent` state may reference another skill's intent model
- Allows one skill to share another skill's intents
- Resolved intent name and entities are returned to calling skill
- Use cases
  - Common intents (train once)
  - Use of different intent engine



Inter-Skill referencing does not execute the referenced skill's dialog flow. All intent handling happens in the skill that references the intent model of another skill.



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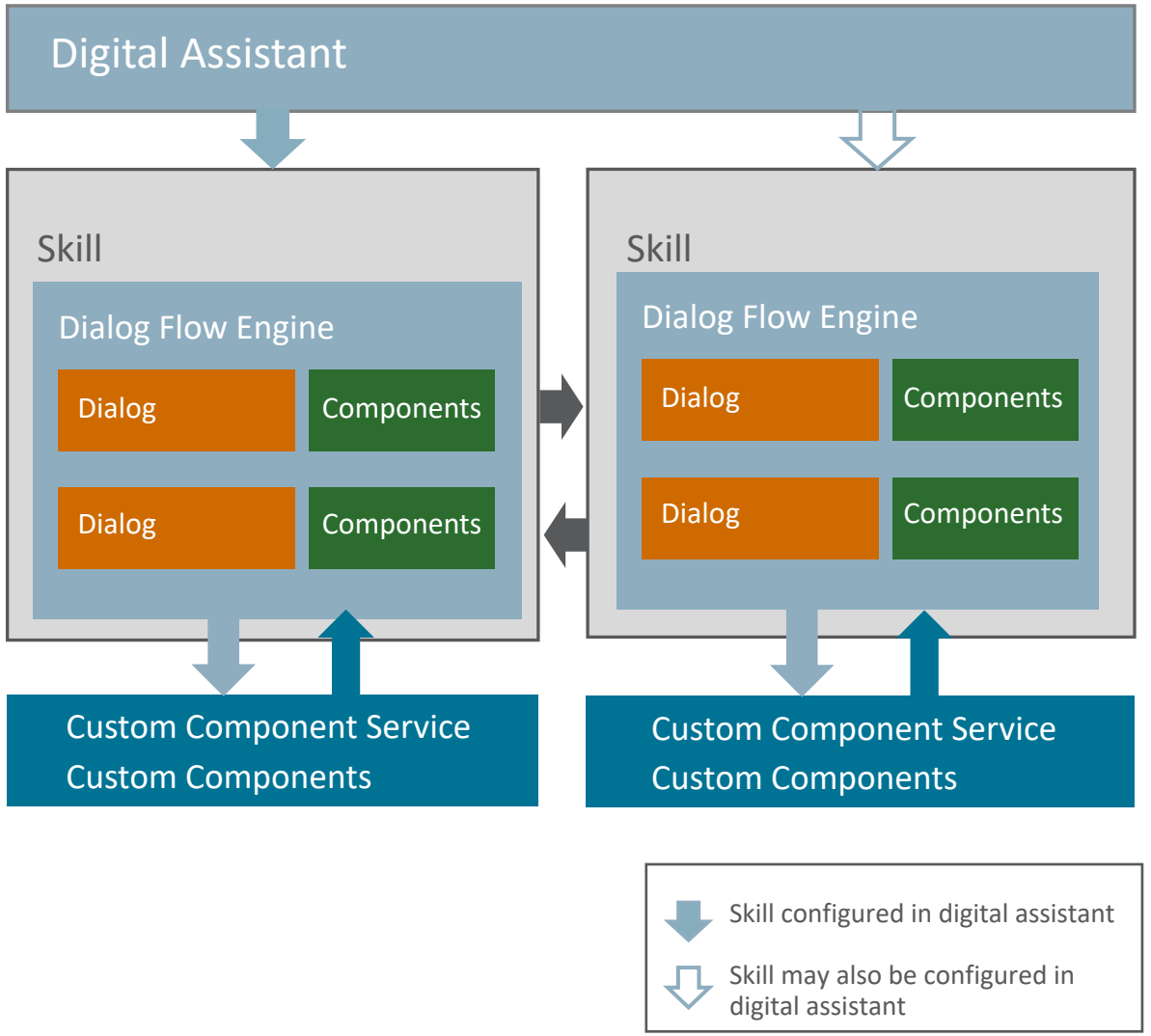
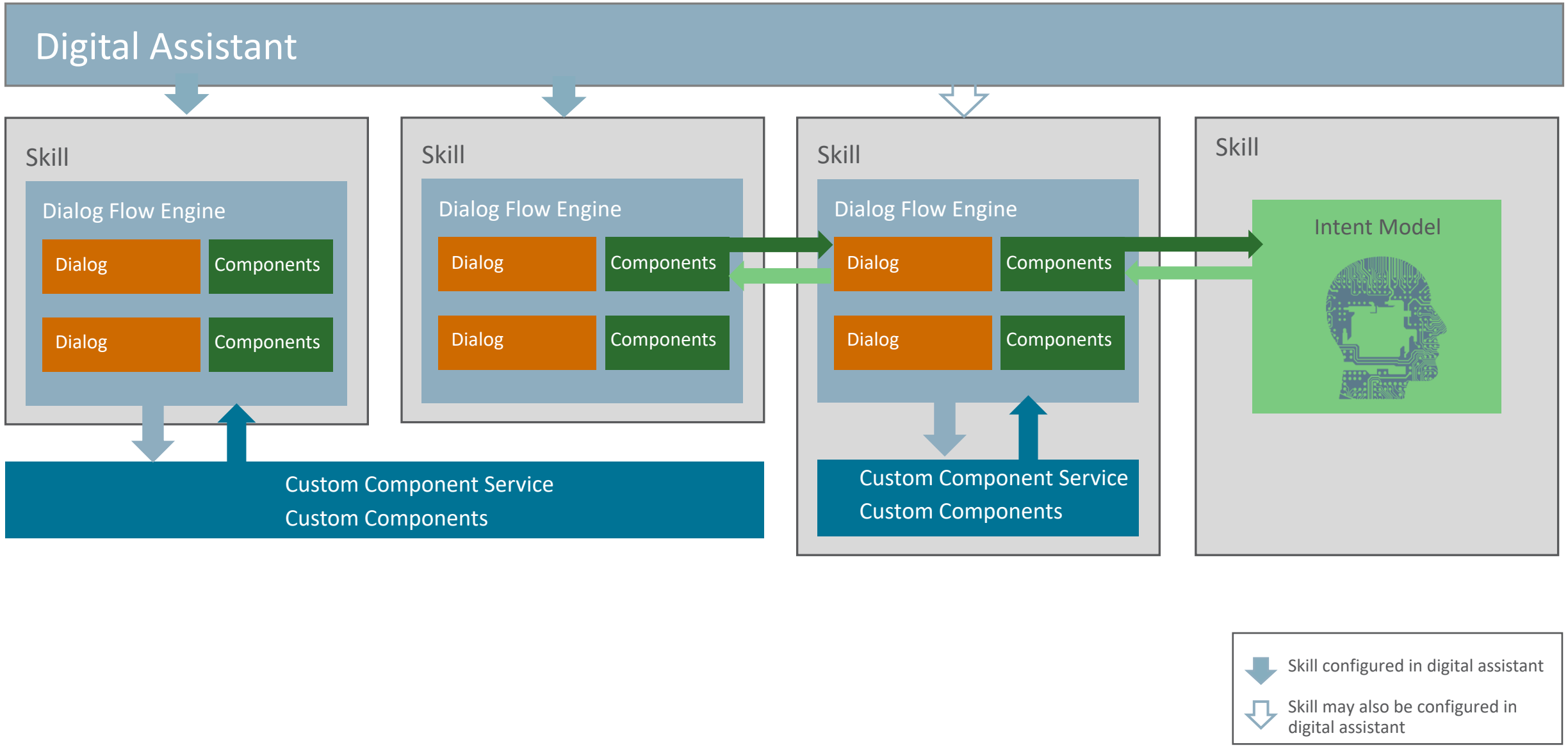
# Skill calling skill

- Calling skill
  - Uses `System.CommonResponse` component
  - Passes message to digital assistant





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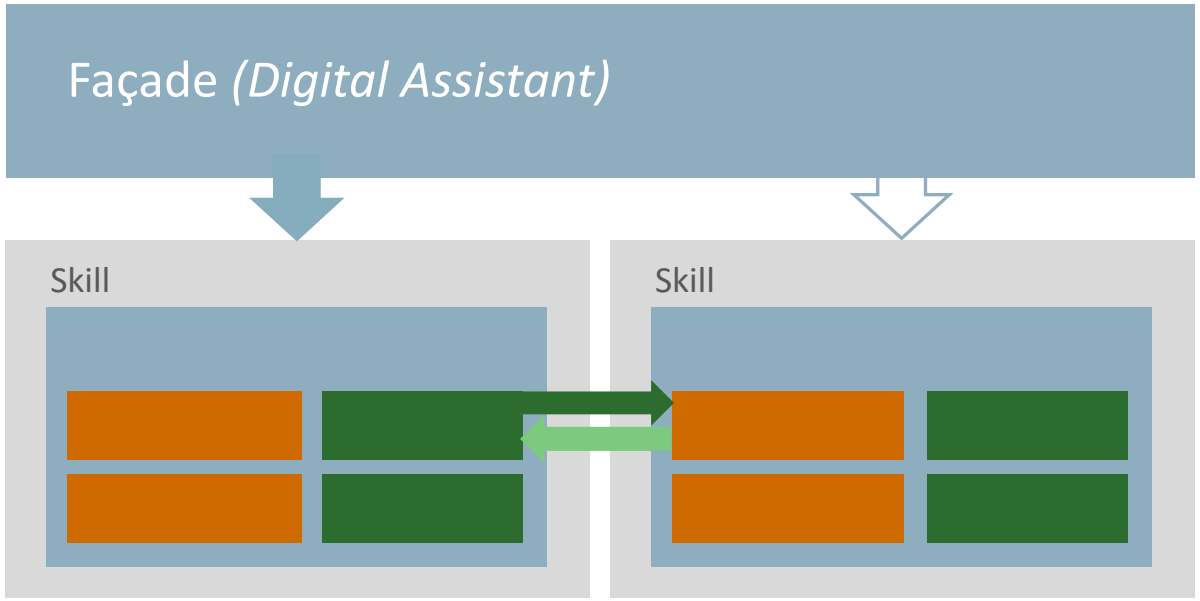
# About digital assistant

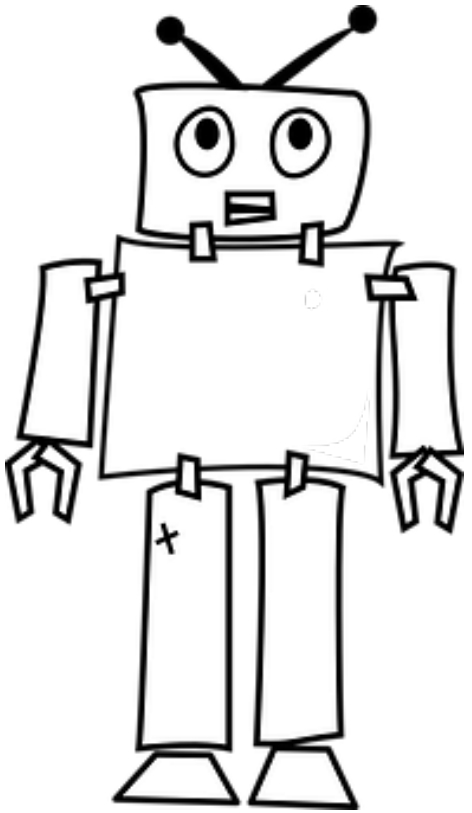
- Front-end bot that redirects user messages to one of its configured skills
  - Routing is based on intents and utterances, context and direct addressing
- Disambiguates user messages if required
- Exposed on one or many messenger channels
  - Messenger payload differences handled by configured channel connector
- Design time for digital assistant designers
  - Create chatbots by orchestrating individual skills
    - Configuration only (no coding)
  - Digital assistant designers may or may not be the skill developer

# Thinking in patterns: Digital Assistant

- Façade
  - Single entry point for a bot
  - Skills "hidden" from user view
  - Skills can be added, removed or updated without re-deployment



**Define a clear goal for your digital assistant** that is different from "all you can eat".



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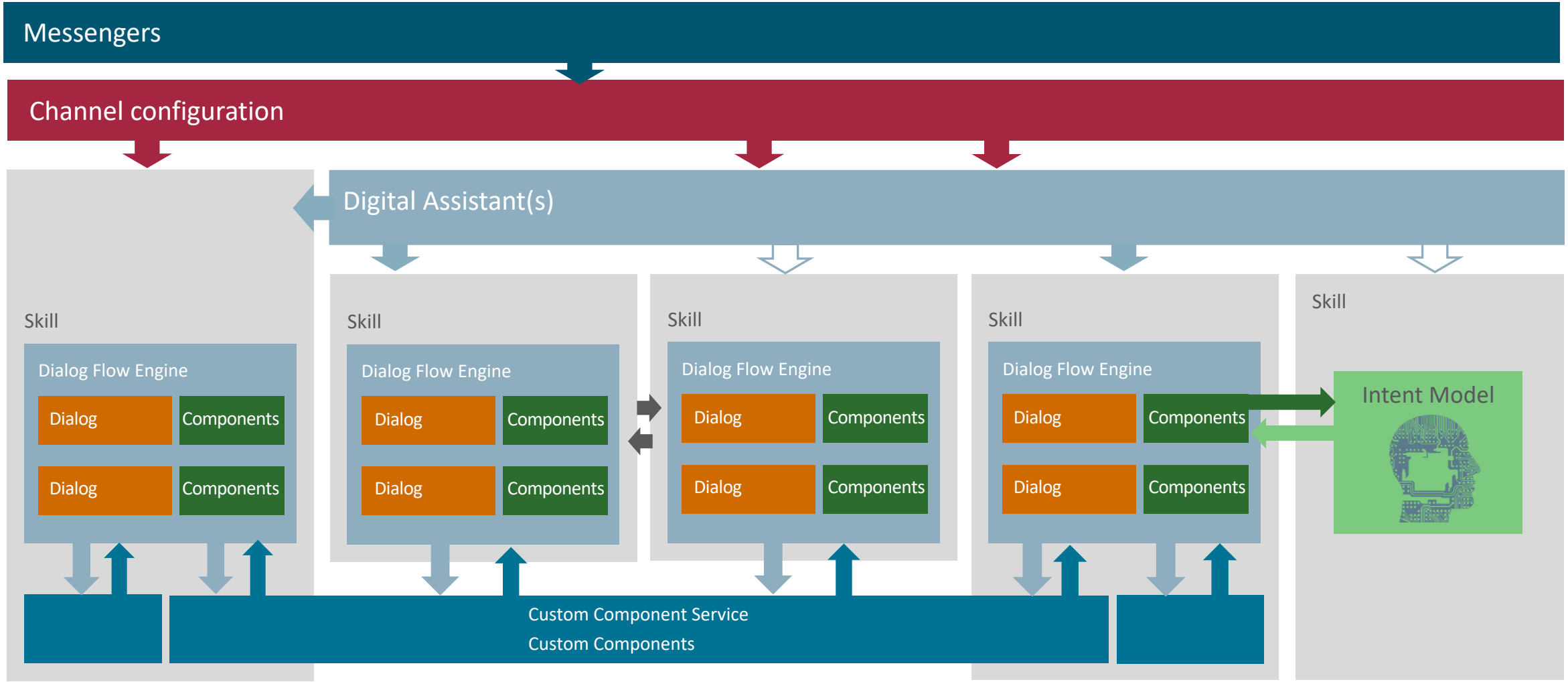
# Oracle Digital Assistant architecture possibilities



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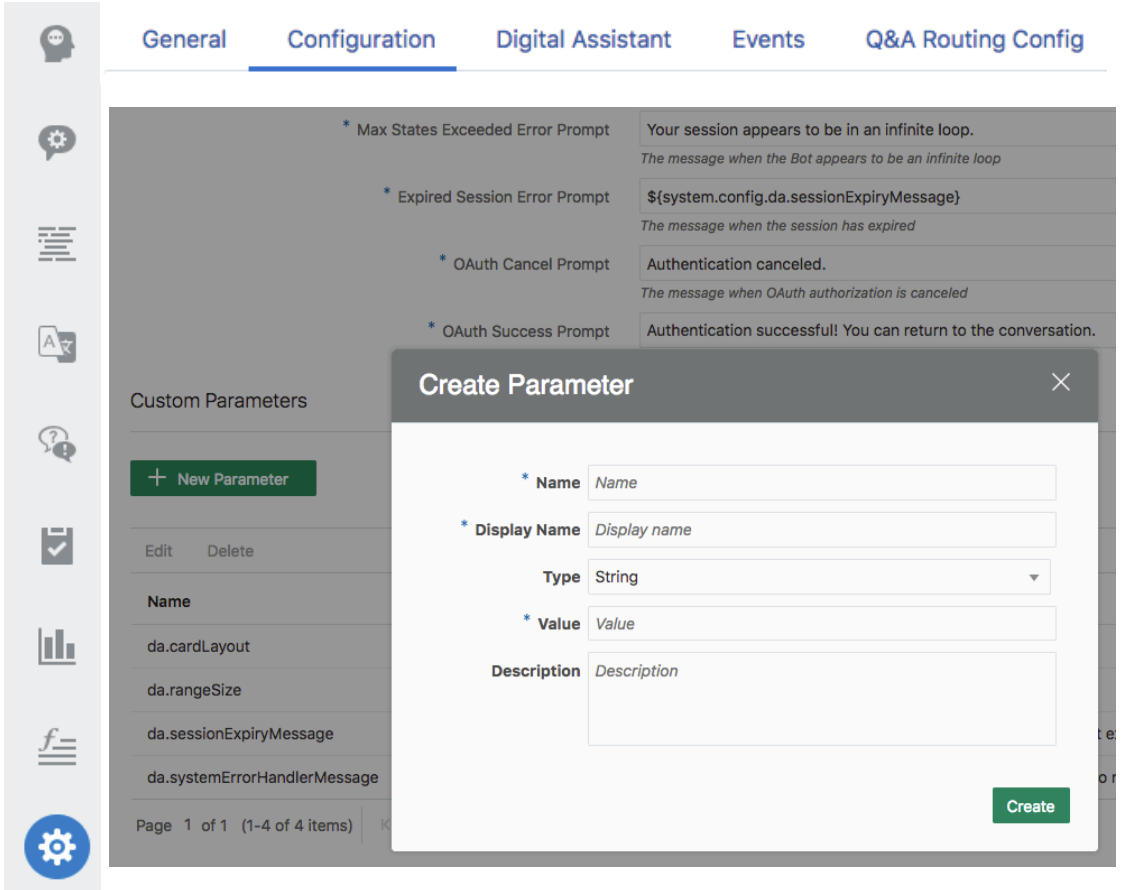
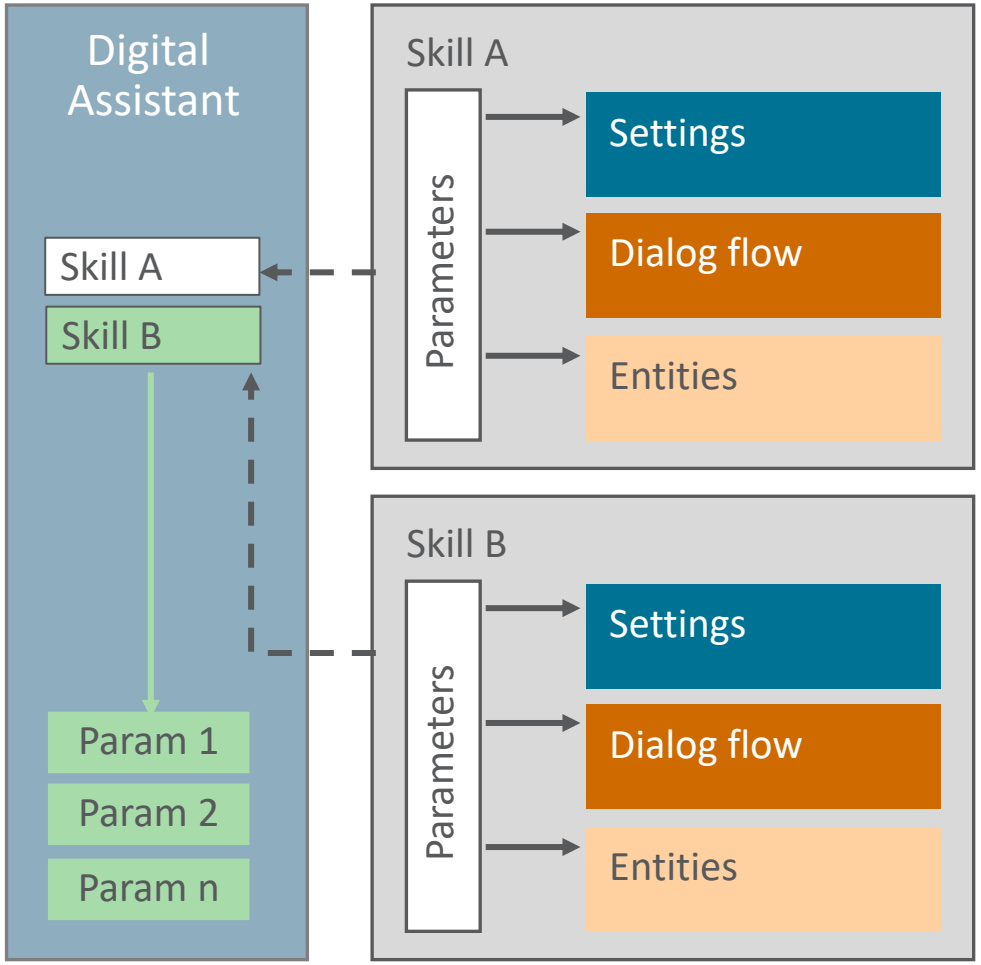
# Defining custom parameters for a skill

- Custom parameters are created in the *Settings* panel of a skill
- Supported data types are string, integer, float and boolean
- Naming convention
  - Parameter name **with no** "*da.*" prefix are in skill-only scope
  - Parameter names **with** "*da.*" prefix are visible and accessible in digital assistant



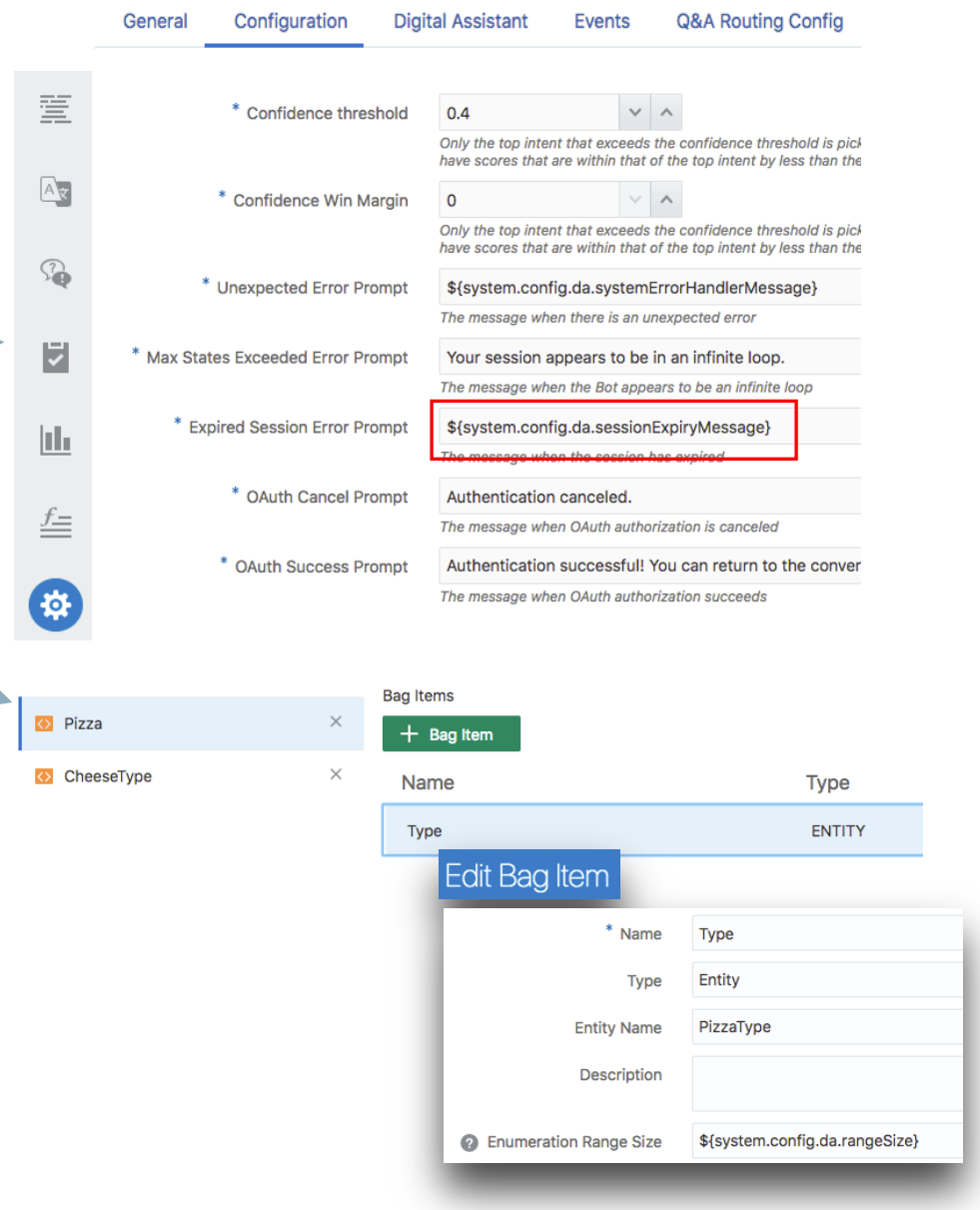
# Exposing skill parameters to digital assistant

- Improves user experience through consistency
  - Consistent messages
  - Similar behaviors and looks
- Defines a contract between a skill and the digital assistant
  - Improves reusability
  - Parameters with a "da." name prefix are exposed to digital assistant



# Accessing parameters in skill

- Skill parameters are accessible from
  - Skill's settings panel
  - In Entities
  - In dialog flow
- Read access
  - `${system.config.<name>}`
- Write access
  - `System.SetVariable`
    - variable: "system.config.<name>



# Integrated Cloud

## Applications & Platform Services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